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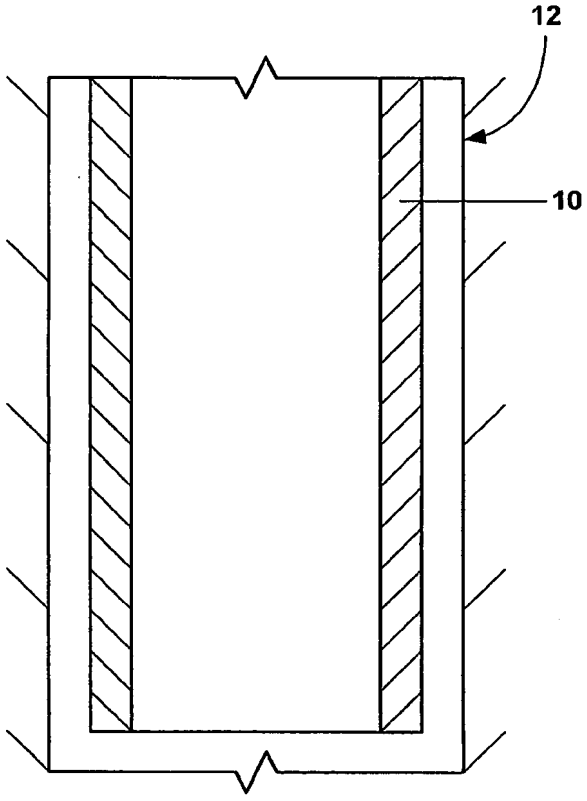
[Continued on next page]

(54) Title: RADIAL EXPANSION OF A WELLBORE CASING AGAINST A FORMATION

(57) Abstract: Radial expansion of a wellbore casing against a formation.



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AMENDED CLAIMS
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What is claimed is:

1. (cancelled)

2. A method of coupling a wellbore casing to the interior surface of a wellbore, comprising:

positioning a wellbore casing within the wellbore; and

radially expanding and plastically deforming the wellbore casing into direct contact with the wellbore to form a fluid tight seal between the casing and the wellbore;

wherein the fluid tight seal between the casing and the wellbore is capable of sealing off fluidic materials having an operating pressure of up to about 2700 psi.

3. A method of coupling a wellbore casing to the interior surface of a wellbore, comprising:

positioning a wellbore casing within the wellbore; and

radially expanding and plastically deforming the wellbore casing into direct contact with the wellbore to form a fluid tight seal between the casing and the wellbore;

wherein the fluid tight seal between the casing and the wellbore is capable of sealing off fluidic materials having an operating pressure of at least about 2500 psi.

4. – 7. (cancelled)

8. A method of coupling a wellbore casing to the interior surface of a wellbore, comprising:

positioning a wellbore casing within the wellbore; and

radially expanding and plastically deforming the wellbore casing into direct contact with the wellbore to form a fluid tight seal between the casing and the wellbore;

wherein the fluid tight seal between the casing and the wellbore is capable of withstanding a tensile load of up to about 180,000 lbf.

9. A method of coupling a wellbore casing to the interior surface of a wellbore, comprising:

positioning a wellbore casing within the wellbore; and

radially expanding and plastically deforming the wellbore casing into direct contact with the wellbore to form a fluid tight seal between the casing and the wellbore;

wherein the fluid tight seal between the casing and the wellbore is capable of

withstanding a tensile load of at least about 160,000 lbf.

10. A method of coupling a wellbore casing to the interior surface of a wellbore, comprising:

positioning a wellbore casing within the wellbore; and

radially expanding and plastically deforming the wellbore casing into direct contact with the wellbore to form a fluid tight seal between the casing and the wellbore;

wherein the fluid tight seal between the casing and the wellbore is capable of withstanding a tensile load of at least about 120,000 lbf.

11. A method of coupling a wellbore casing to the interior surface of a wellbore, comprising:

positioning a wellbore casing within the wellbore; and

radially expanding and plastically deforming the wellbore casing into direct contact with the wellbore to form a fluid tight seal between the casing and the wellbore;

wherein the fluid tight seal between the casing and the wellbore is capable of withstanding a tensile load of at least about 100,000 lbf.

12. A method of coupling a wellbore casing to the interior surface of a wellbore, comprising:

positioning a wellbore casing within the wellbore; and

radially expanding and plastically deforming the wellbore casing into direct contact with the wellbore to form a fluid tight seal between the casing and the wellbore;

wherein the fluid tight seal between the casing and the wellbore is capable of withstanding a tensile load of at least about 80,000 lbf.

13. A method of coupling a wellbore casing to the interior surface of a wellbore, comprising:

positioning a wellbore casing within the wellbore; and

radially expanding and plastically deforming the wellbore casing into direct contact with the wellbore to form a fluid tight seal between the casing and the wellbore;

wherein the fluid tight seal between the casing and the wellbore is capable of withstanding a tensile load of at least about 60,000 lbf.

14. A method of coupling a wellbore casing to the interior surface of a wellbore, comprising:

positioning a wellbore casing within the wellbore; and

radially expanding and plastically deforming the wellbore casing into direct contact with the wellbore to form a fluid tight seal between the casing and the wellbore;

wherein the fluid tight seal between the casing and the wellbore is capable of withstanding a tensile load of at least about 40,000 lbf.

15. (cancelled)

16. An apparatus, comprising:

a wellbore; and

a wellbore casing positioned within and engaged with the wellbore to form a fluid tight seal between the casing and the wellbore.

17. The apparatus of claim 16, wherein the fluid tight seal between the casing and the wellbore is capable of sealing off fluidic materials having an operating pressure of up to about 2700 psi.

18. The apparatus of claim 16, wherein the fluid tight seal between the casing and the wellbore is capable of sealing off fluidic materials having an operating pressure of at least about 2500 psi.

19. The apparatus of claim 16, wherein the fluid tight seal between the casing and the wellbore is capable of sealing off fluidic materials having an operation pressure of at least about 2000 psi.

20. The apparatus of claim 16, wherein the fluid tight seal between the casing and the wellbore is capable of sealing off fluidic materials having an operation pressure of at least about 1500 psi.

21. The apparatus of claim 16, wherein the fluid tight seal between the casing and the wellbore is capable of sealing off fluidic materials having an operation pressure of at least about 1000 psi.

22. The apparatus of claim 16, wherein the fluid tight seal between the casing and the wellbore is capable of sealing off fluidic materials having an operation pressure of at least about 500 psi.

23. The apparatus of claim 16, wherein the fluid tight seal between the casing and the wellbore is capable of withstanding a tensile load of up to about 180,000 lbf.

24. The apparatus of claim 16, wherein the fluid tight seal between the casing and the wellbore is capable of withstanding a tensile load of at least about 160,000 lbf.

25. The apparatus of claim 16, wherein the fluid tight seal between the casing and the wellbore is capable of withstanding a tensile load of at least about 120,000 lbf.

26. The apparatus of claim 16, wherein the fluid tight seal between the casing and the wellbore is capable of withstanding a tensile load of at least about 100,000 lbf.

27. The apparatus of claim 16, wherein the fluid tight seal between the casing and the wellbore is capable of withstanding a tensile load of at least about 80,000 lbf.

28. The apparatus of claim 16, wherein the fluid tight seal between the casing and the wellbore is capable of withstanding a tensile load of at least about 60,000 lbf.

29. The apparatus of claim 16, wherein the fluid tight seal between the casing and the wellbore is capable of withstanding a tensile load of at least about 40,000 lbf.

30. The apparatus of claim 16, wherein the fluid tight seal between the casing and the wellbore is capable of withstanding a tensile load of at least about 20,000 lbf.

31. A method of determining one or more properties of at least one of a wellbore and a formation traversed by the wellbore, comprising:

radially expanding and plastically deforming a tubular member within the wellbore using an expansion device;

monitoring one or more operating parameters of the expansion device; and

correlating one or more of the operating parameters of the expansion device to one or more of the properties of at least one of the wellbore and the formation.

32. The method of claim 31, wherein radially expanding and plastically deforming a tubular member within the wellbore using an expansion device comprises:

radially expanding and plastically deforming the wellbore casing into direct contact with the wellbore to form a fluid tight seal between the casing and the wellbore.